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Virginia Wildlife

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Virginia Wildlife

Dedicated to the Conservation of Virginia's Wildlife and Related Natural Resources and to the Betterment of Outdoor Recreation in Virginia

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IN THIS ISSUE **PAGE**

COVER: Brook trout, by Commission artist Carl Knuth.

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EDITORIAL

A Matter of Viewpoint

THE other day someone asked me if the Game Commission was doing as much for non-game wildlife as for game species. This is an interesting question and one which most Game Commissions are grappling with at the present time. Some have gone so far as to establish non-game sections specifically charged with looking after the welfare of our less glamorous species.

The "as much" in the original question raises even more questions since not all animals have the same potential for management. We could never do as much for bog turtles as we have for white-tailed deer because they just don't have the potential. Secondly, we must have a management goal for non-game species. Since we wouldn't be shooting them, would we really want to build up numbers of cardinals and bluebirds to abnormally high levels where disease or ecological imbalance might knock them down again? Even though all knowledge is valuable, is it wise to invest large sums in research on species we know are holding their own quite well in these difficult times? Virginia's program qualifies it for any federal funding that may become available for non-game research. We have yet to see a "non-game" management plan that promises more results than Virginia's more general approach.

Generally, Game Commission programs benefit both game and non-game species. A game warden on patrol is equally prepared to arrest a deer spotlighter or someone who just shot a hawk. Wildlife management areas scattered across the state preserve a variety of habitat types for game and non-game species alike. Wildlife food plantings attract more songbirds than quail, as anyone who has walked through a wildlife food patch in late fall or winter can attest. Wildlife biologists are cognizant of the status of non-game as well as game in their districts. They were ready with basic information when protection of mountain lions and bobcats was being considered by the Commission. Educational efforts likewise cover the whole gamut of the state's wildlife, not just game species. Most popular among our informational leaflets are folders on building birdhouses and identifying snakes.

Investigations of endangered species, including some obscure fishes of no direct interest to fishermen, are being financed with Game Commission funds to provide the facts necessary not only to protect these threatened members of the state's fauna, but to manage the whole aquatic ecosystem of a watershed, in which game fishes constitute only the top level of existing food chains. So when you consider the overall picture, "as much" largely depends on the angle from which you view it.—H. L. G.

LETTERS

"Facts" Were False

WITH the current emphasis on our awareness of the natural world around us and the protection of endangered species, I found the January 1975 issue of *Virginia Wildlife* quite dissatisfying. I was initially shocked to find that the back cover had a painted turtle depicted as an amphibian. Needless to say this is far from being accurate and becomes severely misleading to the many youngsters that enlist such drawings as aids for schoolwork and learning.

Probably the most misleading information, however, is printed in the article on the endangered osprey. Obviously the article did not intend to state that the osprey were fledging 98 young per nest in 1973. We pray for population rebounds, but that's a little hard to comprehend. Having assisted Dr. Byrd in the field with his osprey work since 1970, I am aware of the large number of people who follow the osprey's plight quite avidly. They should be better informed and be told that the osprey were fledging .98 young per nest during 1973.

Lastly, though my botanical background is limited, I believe the genus for clubmosses is Lycopodium, not Sycopodium as is stated in Judy Price's article on page 19.

My qualifications? I hold an M.A. from the College of William and Mary with concentration in herpetology and ornithology.

Bill Williams
Williamsburg

You're absolutely right on each count. Thanks for the close scrutiny of the magazine and for bringing the errors to our—and our readers'—attention. In these cases our editing and proofreading left much to be desired. The hibernating turtle cutline should have read, "Most amphibians, and some reptiles such as turtles, pass the winter in the mud at the bottom of ponds."—Ed.

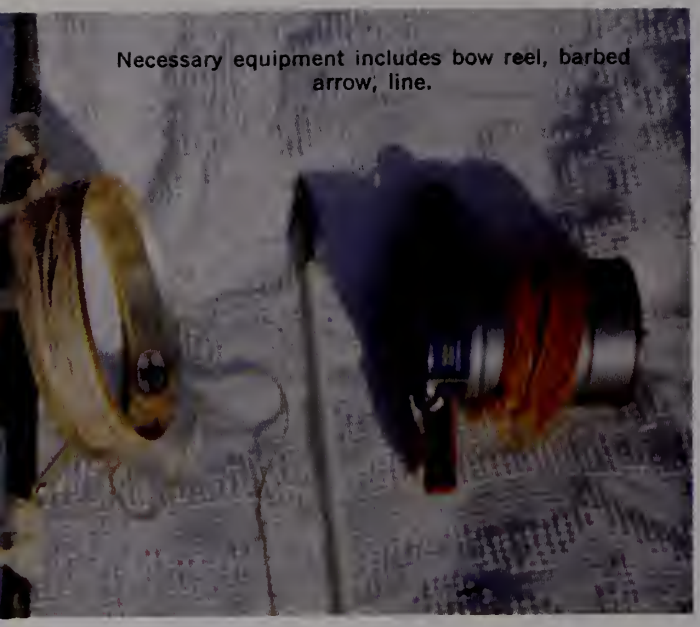
Governor Godwin has recognized April 22 as "PLANT A TREE DAY" in support of the Virginia Division of the Izaak Walton League's continuing program to add beauty and utility to our Natural Heritage.

Hawks/Bobcats: Protected?

OUR Warren County Chapter of the Izaak Walton League of America would like to know the status of the chicken hawk and red-tailed hawk—whether or not they are on the restricted list to hunters, also bobcats. Some of our hunters are finding signs of hawks killing rabbits, etc.

Ray H. Borden, Secretary
Warren County Chapter, IWLA

All hawks and owls are protected by both State and Federal laws. Hawks don't pose a serious threat to rabbits if cover is adequate and properly located near feeding areas. Perhaps your club members could use their talents by planting and improving cover. The bobcat is protected except during the raccoon season. There is no bag limit on it.—Ed.



Necessary equipment includes bow reel, barbed arrow, line.

CARP COUNTRY

By RANDY GRAY BOWERS
Centreville

A good shot scores direct hit on a cruising carp.

A PAIR of wood ducks winged overhead as our boat glided toward the sound of hundreds of fish spawning in the shallows among great rafts of lily pads. Poised on the bow, I searched the water for a trophy fish among those thrashing frantically around us. Suddenly, off to our right, I spotted a lunker sow and five small bucks moving our way. The huge carp surged toward us like a bronze torpedo, slashing from side to side, as the smaller bucks swarmed around her in their spawning rituals. As my partner quietly positioned our boat for my shot off the bow, I slowly came to full draw and waited for a clear shot at the sow. For a split second, her back showed above the water and I knew the golden moment had arrived. The arrow flashed through the air trailing the line from bow reel and smashed into the carp with a resounding crack. The result was astounding, as the lunker leaped out of the water and streaked away in a scorching run. After a few frantic moments, I worked her alongside the boat where she suddenly got her second wind and raced away again, this time towing the boat and her amazed crew behind it. Finally, the yard-long fish lay finning beside the boat. Carefully, I reached down, slipped my hand into her gills and clamped down. The monster exploded in a shower of mud and muddy water drenching my partner and me to the skin. Luckily, my grip held as I lifted her into the boat and gave her a gentle love-tap with a boat oar before laying her in the bottom of the boat. She was a beautiful fish, thirty-seven inches long and twenty-two pounds of dynamite.

As we got our gear in order, my bowfishing partner, Earl Hodnett, spotted another large fish thrashing among some smaller bucks off the stern. While Earl checked his gear, I positioned the boat for his shot. The huge carp bulldozed through the lilies passing about twenty feet from the stern, as Earl came to full draw and released. His arrow socked into the carp and the results were spectacular. The big sow thrashed the water to a froth, but soon lay finning beside the boat. Her boating was a repeat of our first—complete with another muddy bath for both of us. As my partner grinned at me through a coat of mud, we realized that in forty-five minutes and with only two shots, we had bagged two Virginia State Citation fish.

As the morning passed into afternoon and the tide began to ebb, the fish began moving out of the lilies and across the shallow flats toward deeper water. We also moved out onto the flats and waited for the fish to pass our boat. For two hours, we got some fantastic shooting at invisible targets pushing "V"-shaped wakes across the flats. The trick was to shoot about a foot in front of the "V" in order to score. This got to be tricky shooting, as we made great sport out of trying to shoot fish the other had missed and spooked.

After the tide reached its lowest point, we decided to make a trip out along the edge of the flats where the deep water joins the shallows. Earl was up for a shot, as I poled through the water searching for a target. Suddenly, we spotted a pair of huge fish thrashing on the surface of the deep water. I poled frantically to catch up to them and finally got Earl into position for a broad side shot at the two lunkers. As they passed in front of us, I estimated that the smaller of the two would weigh twenty-five pounds and the other, a real monster, forty pounds or more. Earl came to full draw, released, and connected. To our surprise and dismay, he had missed both of the lunkers and clobbered an unseen buck carp of about five pounds. The lunkers just disappeared into the murky depths.

All of this fantastic action took place in mid-May on one of the many tidal flats of the Potomac River about ten miles from Washington, D. C. Earl and I are employed with the Northern Virginia Regional Park Authority and live and work just a few short minutes from the beautiful wild sections of the Potomac. It is hard to believe that thousands of people live and work so near this beautiful natural area, where deer browse at the water's edge, great bald eagles soar aloft searching for prey, and carp abound.

For those of you who are new to the sport of bowfishing, let me say that carp shooting offers a real challenge to even the best bow benders. Usually the target is partially hidden in muddy water or lily pads and at times completely invisible, except for a telltale ripple on the surface of the water. It is also important to remember to compensate for light refraction on those fish that are visible under the water. Don't expect those fish lolling on the surface with their backs out of the water to be pushovers. Let me assure you that they will only float there for a few seconds, and the slightest sound or quick movement will leave you sheepishly looking down your arrow at an empty muddy swirl. Good timing, a sharp eye, an ability to compensate, and lots of fisherman's luck will allow you to connect—sometimes.

Bowfishing need not be an expensive sport. Assuming you already own a bow, a fish arrow and a bow reel with line can be purchased for considerably less than ten dollars, or you can make your own equipment. I have experimented with several types of commercial reels and three types of homemade reels during the past three years. For my money, I chose a large shoot-thru reel which gives good visibility and offers quick rewind because of the large diameter of the reel. However, I have had good results with several reels constructed from coffee cans taped to the bow and even took two twenty-pound-plus citation fish during 1972 using one.

There are many types of fish arrows available on the market today and most work very well. Be sure to choose one with a sturdy harpoon head and a solid fiber-glass shaft. These arrows are heavy enough to give good penetration on deep-water shots and are tough enough to take the beating a big fish can dish out.

Carp Country (Continued from page 5)

I do not recommend that you use your best bow for carp shooting as it will certainly get *very* wet and *very* muddy. We use inexpensive solid fiber-glass bows of forty-five pounds draw and find them excellent for the rough conditions we often experience. These bows can be purchased for as little as fifteen dollars and this is a small price to pay for sparing damage to your best bow. You can certainly use your best bow, but be sure to hold onto it as it is not difficult to have it slip overboard or be snatched away by a lunker carp. I have never lost a bow, but I have lost several arrows to lunkers that broke my line and swam off with my arrow knifing through the water like a periscope on a submarine. I grew wiser after a couple of experiences like this and now use one hundred and eighty-five pound test nylon line.

Finding targets is perhaps the easiest part of all. Since their introduction into this country from Europe during the late nineteenth century, carp have spread throughout the United States and can be found in practically every state in great abundance in most freshwater streams, rivers, and lakes. Other equally sporting targets are longnose gar (a Potomac bonus!), alligator gar, snapping turtles, and buffalo fish in fresh water; and skate, sharks, and rays in salt water.

The best time to hunt carp is in the spring when they move into the shallows to spawn. This is the time to be out on the flats ready for fast action. For at times when they surround your boat, thrashing the water to a froth, you may feel a need to shoot in self-defense!

There are several accepted ways of approaching spawning fish, but I recommend a flat bottom johnboat poled *slowly* and *quietly* through the shallows, above all other methods. The boat will offer you an elevated shooting position and make it a lot easier to see into the water, providing you are wearing polaroid sunglasses. Using a boat is often the only way to reach certain "hot spots" on large rivers and lakes. It will also enable you to cover more territory while searching for concentrations of fish. Poling with a long pole having a duckbill attached to it is much easier and a lot quieter than paddling or rowing.

So why not try a little of my advice and join us next spring for a "crack" at a bronze lunker on the Potomac flats. You may find that you have been missing one of the most exciting archery events of the year—right in your own back yard.

Coastal Canoeists (Continued from page 8)

some 10% of the way and that's on level ice or snow, not uphill.

Hundreds of miles of rivers have been classified as to formidability—Class 1 being for the novice, going up to class 5 for the expert. Distances, accessibility, proper craft, proper gear, normal water levels and any other pertinent facts are accurately recorded in the club's files.

For the sake of safety no less than four canoes are desired, but three are a bedrock minimum in order for any trip to be approved as a club outing.

The number of craft afloat at any given time determines how many qualified canoeists ride herd. In any event there is always a lead canoe and a following canoe known as the "sweep." No one passes the lead, and the sweep always stays behind the flotilla. Both carry proper life-saving and survival equipment. There has never been a casualty in the club beyond some minor roughing ups, a sprain or two and some badly bruised egos. BUT, the life-saving equipment has been put to use in some really rough white water episodes about twenty times up to now. Need I say more?

Coastal Canoeists doesn't own any canoes or equipment other than that concerned with rescue and survival. The members each furnish their own gear.

In skimming through some bulletins I counted over 50 rivers listed in their itinerary. Most of these are in Virginia, but West Virginia, Maryland, North Carolina and Tennessee come in for their fair share and a few are scattered around other states.

It seems reasonable to assume that the current gasoline situation will greatly increase the interest in canoeing. Six people and three canoes to one vehicle is quite normal. There are miles of scenic waterways to be enjoyed, and as it's all downhill the canoes don't require any gas.

Just for the sake of argument, take the case of six people going on a trip that would involve three hundred miles of driving in order to enjoy a pleasant weekend canoeing. That breaks down to fifty miles per person or just over four gallons each, figuring twelve miles to the gallon, and that's no big deal at fifty five miles per hour on the highway.

Before we ever heard of a gas problem we economized by parking cars at all put in-take out points so they could be relayed downriver at day's end instead of a mass shuffle from put in to take out. That's one way to set up a pleasant canoe trip with lunch at some shady spot on the riverbank and maybe a little swimming and fishing thrown in for good measure. As minimum shuffling of cars is involved, it's usually take out and head for home at the end of the line.

This, then, is roughly the story on Coastal Canoeists; but it could just as easily apply to a club of your own. All it takes is a couple of experienced canoeists to ramrod it and the membership will grow amazingly.

As a parting reminder I want to again stress the fact that canoeing, although a grand sport, is not a lark. Like mountain climbing, experience and knowledge must be gained slowly. If you try to start out by taking on the really tough ones you are sure to come to grief; the degree of which to be determined by fate.

Bear in mind that man doesn't conquer nature, and it's much more satisfactory to be a live student than a dead daredevil.

COASTAL CANOEISTS

DEDICATED TO THE CONSERVATION AND ENJOYMENT OF OUR WILDERNESS WATERWAYS.

By "BUNNY" HENSHAW
Charlottesville

THE Massanutten mountain, ablaze in its autumn glory, was a perfect background for the gay, carnival-like two acre spread of tents, awnings, trailers, canoes, kayaks and what-have-you in every size, shape and color known to man.

It was late October, and that tribe of river nomads known as Coastal Canoeists were on their annual family "Fall Foliage" trip to my camp on the Shenandoah.

They started coming in from all directions Friday night, and by put-in time Saturday there were over a hundred assembled along the riverbank. We counted fifty-seven canoes and kayaks atop the cars and wagons, several of which were carrying a pyramid of three, thereby leaving enough vehicles free to provide shuttle service at the take-out spot.

Incidentally, when the last one had departed Sunday afternoon there was not so much litter as a cigarette butt or bottle cap left behind. Small wonder they have welcome access to so many desirable campsites.

The assemblage was comprised of everything from five year olds to grandparents, and included a couple of boys from broken homes who were accompanying two of the several Coastal Canoeists who are active in the Big Brother program. All had one thing in common: love of the outdoors.

The exhilaration that goes with feeling fresh air on your face as a river flexes its muscles beneath your craft isn't the only attraction canoeing has to offer. The swimming, fishing and outdoor living when not underway are all a very important part of the whole, to be enjoyed by young and old alike.

Back in 1961 O. K. Goodwin and Bob Sterling of Newport News, Virginia (hence Coastal Canoeists, although most of their activities are on mountain and foothill rivers) had visions of a non-profit family type canoe and camping club. One that would not confine its activities solely to testing their skill against roaring white water but would plan programs for the pleasure of everyone, old or young, expert or novice. This would not only keep peace at home but would offer a tyro the benefit of expert on the spot instruction in all the ins and outs of river living, from outdoor cooking to actual survival.

The first year they wound up with an even dozen members and it has now grown to some two hundred representing nine states and the District of Columbia. As most of the memberships are family type this adds up to an enrollment of roughly five hundred. A group this large to draw from justifies the periodic ground

school classes now held which cover various subjects with which they are concerned. These classes are, of course, in addition to on-the-spot instruction. The fact that the O. K. Goodwin family participates in white water competition abroad and have a daughter, Cindy, on the U. S. Olympic women's kayak team emphasizes the quality of the instruction offered.

The first and most important fact of all taught is that man does not conquer a river. Experience teaches man to interpret nature's demands and conform to them if he is to survive. The tragedy that has followed in the wake of a recent widely publicized and attended movie having to do with the adventures of some white water canoeists on the Chattooga is astounding.

The official publication of the American Canoe Association refers to ". . . the numerous persons injured or drowned this spring" as a result of the movie. This publication points out the fact that the movie does not inform the viewers that most of the rough white water work was done by three of the most expert white water canoeists in Georgia and a Hollywood stunt man who were made up to look like the actors in the drama.

Canoeing has been enjoying a tremendous boom for the past few years, and it is alleged that the movie has prompted an unbelievable number of the inexperienced to go venturing on their own.

One outstanding incident involved a novice who knew that in the event of a capsize you should stay with your boat. In order to assure his safety he tied himself to his raft with a piece of rope. When the raft hit a keeper hole it took him under with it, and when his body was recovered it was still secured to the raft.

But back to Coastal Canoeists. The club is well organized and efficiently run. Specific duties are assigned to members best qualified in that particular field.

A planning committee programs the year's schedule rather well in advance, and excursions are set up for every weekend except the two coming closest to Christmas. A trip leader signs up for each of these with an alternate to fall back on. Exploratory trips are included, as well as some as far afield as Maine to the north and Arkansas to the southwest. Some members plan their vacations to coincide with these longer cruises.

Even the ice and cold of winter doesn't deter some of the members who, like their mountain climbing kindred, are unwilling to settle for less than a full measure of nature's wondrous charms. The idea of dragging a canoe across the frozen stretches is often beyond the comprehension of some of the very persons who devote time and energy to pulling a sled back uphill exactly as far as they ride it down. However, if you know your rivers (and well they do), you only drag

(Turn back to page 6)

Virginia offers many opportunities for exciting fast water and peaceful riverside campsites.

The Monarch

By MAXINE DAVIS
Atkins

A MIGRATION takes place each autumn, which is more amazing than that of any of our birds.

Monarch butterflies, on beautiful but fragile orange-brown wings, with veins of black, and edges of white dots on the black, drift across lawns, highways, cities, and meadows, from late September until late November.

These butterflies (Monarch, *Danaus plexippus*) travel singly, usually, rather than in flocks, yet thousands pass by a given point each day. Sometimes, however, dozens or even hundreds, can be seen at one time. It is fascinating to watch these lovely winged creatures flutter by—some high, some nearer the ground, but always drifting from the northeast, here in southwest Virginia, towards the southwest.

They are closely tied to the milkweed and often stop to feed on milkweed, flowers, or alfalfa. Trees provide them roosting places at night. They do not have to worry about birds because birds will not eat them. They have a very unpleasant taste. Even the caterpillar stage of the monarch is left alone, because the milkweed on which it feeds makes it poisonous.

It is amazing that many of these delicate creatures are able to make a two-thousand mile flight. The most remarkable part of its travel is that those that we see this fall are completing a round trip they never started—and which they will never make again. From their breeding grounds in Canada, they gather and start south on a rather definite route. As we watch them drifting slowly along, apparently almost effortlessly, it is difficult to think of them as a powerful, long-distance, champion flyer.

In the East, most of them spend the winter spread out over an area near the Gulf Coast. They winter most often in pine trees, and seem to winter in the same trees each season. The concentrations in the East do not approach that of the West, especially that of Pacific Grove, California, where tourist signs point to the most popular butterfly trees. Enormous numbers spend the winter there, where they cling in semi-dormant condition on the twigs and needles of the pines.

At the start of their long journey south, the butterflies are a velvety orange and black, but by the end of their long battle with the wind and other adversities, their coloring becomes dull, and their wings become ragged. It is partly because these scars of long migrations are not seen in the north, that it appears they make the northward journey through several generations.

Dr. Fred Urquhart, professor of zoology at the University of Toronto, Canada, clings to the theory that monarchs undergo a seven-year cycle. Scientists say that some females that survive the winter will start north next spring and will lay eggs on the underside of leaves of the first young milkweed they find; then they will die, Those eggs, later, become large colorful caterpillars which feed hungrily on the milkweed.

In due time, a brand new generation of monarchs emerges from the pupae stage of those caterpillars, and the new butterflies take up their part of the northward migration, like members of a relay team. Soon they lay eggs on milkweeds farther north.

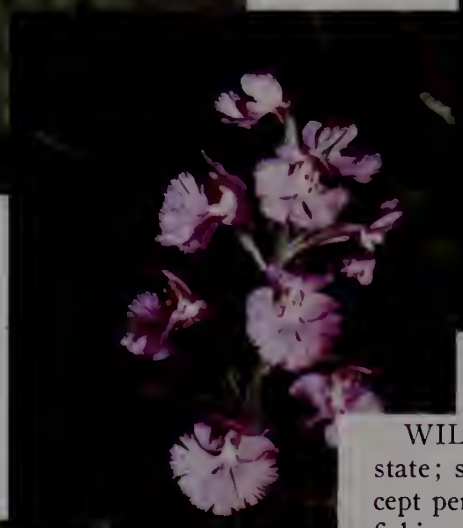
The relay continues on and on, and some individuals reach far into Canada. The monarchs we see returning this fall may be the third or fourth generation of the much smaller numbers we saw going north last spring. This relay type migration journey, requiring several generations of butterflies, is nothing less than amazing.

During migration, often a dead monarch will be found where it has struck a wire or something in its flight. A large number are killed on windshields and radiators of cars—but the population does not seem to be noticeably declining.

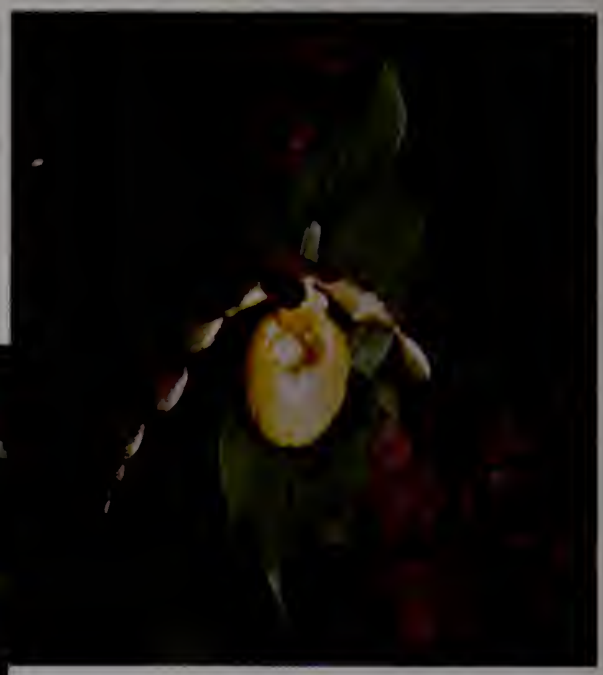
Near the middle of September, begin to watch for these beautiful creatures to flutter across your lawn, almost endlessly, for weeks. You will be fascinated.

NATIVE ORCHIDS

Whorled pogonia



Purple fringed orchid



Yellow lady's-slipper

By RICHARD PAULEY
Lynchburg

Photos by E. L. PAULEY

Large pad-leaf orchid

Yellow fringed orchid

Spotted coral-root orchid

WILDFLOWERS are found everywhere across our state; some species in bloom nearly every month, except perhaps in the dead of winter. Many hunting and fishing trips have been greatly enriched by encounters with wildflowers. I've learned to derive as much pleasure from searching for and photographing a group of wildflowers as from matching wits with an old tom turkey. The suspense of the "chase" is just as present when looking for a rare species of wildflower to photograph, as it is when pursuing the wariest big game.

No wildflowers can be so beautiful and exasperating as can the orchid family. Wild orchids vary greatly in size, shape, color, soil requirements, and individual blooming seasons. There are many species in Virginia.

Our native orchids bloom from late April through October; at their peak, no other flower can match their beauty. They may be as large as the purple fringed orchid (up to 4 feet high or more), or as tiny as the spotted coral-root orchid (3 or 4 inches high).

All flowers in the orchid family are uniquely constructed. These delicate plants have bilaterally symmetrical flowers with three sepals, and a pair of rather lateral petals. The third, centrally located petal is often quite prominent and lip-shaped, as in the case of the lady's-slippers. Internal structures of these plants are quite complex, directly attached to the ovary. After flowers wither, a capsule or pod forms, containing the numerous minute seeds indicative of orchids.

Wild orchids are quite rare and becoming less plentiful with each season. They should never be picked or dug up. Orchids are delicate plants even in their

natural habitat; nearly all attempts at transplanting end in failure. All native orchids are difficult to cultivate, and are prime targets for pests such as slugs, burrowing rodents, and various types of fungi. Learn to capture these gorgeous flowers on film, and leave them in their natural haunts for others to enjoy.

A Few of Virginia's Wild Orchids

PINK LADY'S-SLIPPER (Cypripedium acaule)—April-June. Perennial. Blooms late April in pine-dominated woodlands. Common native orchid rare enough not to be disturbed. Most prominent feature: central petal which forms the pink, slipper-like pouch veined with crimson, which may reach length of over 2 inches.

SHOWY ORCHIS (Orchis spectabilis)—April-May. Blooms in mountain hollows when majority of spring flowers are reaching their zenith. Often found in small "family" groups in rich woods, with two glossy green leaves of each plant forming contrasting background for multiple, bi-colored flowers. Usually, three to ten pink and white flowers on each flowering spike; some local variations in color. Often have waxy appearance. Several plants blooming together look almost too beautiful to be real.

YELLOW LADY'S-SLIPPER (Cypripedium Calceolus)—April-June. One of our larger wild orchids; individual plants often over two feet high. Yellow pouch dotted with red specks inside; usually has somewhat more waxy appearance than does its pink cousin. Lateral petals twisted in spiraling fashion. Usually much rarer than pink lady's-slipper, but may be locally abundant on shaded slopes and in deep hollows of rich mountain woods.

PURPLE FRINGED ORCHID (Habenaria psycodes)—June-August. Beautiful perennial. Very fragrant purple or lilac colored flowers; each divided into three prominent deeply fringed parts. Individual plants vary in height from one to four feet. Rather infrequent but often found in swampy meadows, and wet woodlands.

YELLOW FRINGED ORCHID (Habenaria ciliaris)—June-September. Native orchid. Flowers usually more orange than yellow; unlike its purple relative, each flower sports tapering spur, as well as longer, deeply fringed lip. Generally considered rare though fairly common in mountainous areas of Roanoke and Montgomery counties. Ranges in height from about 15 to 32 inches; may be found in open woods and meadows and along dry, sandy hillsides.

WHORLED POGONIA (Isotria verticillata)—April-July. Very rare. Stately flowers perch on 6-14 inch stem; each flower surrounded by narrow, linear sepals. Whorl of 5 bright green leaves found directly under the solitary or rarely double flower. I have found this plant in only one other location outside Rockbridge county, but would recommend ardent pursuers to search deep woods and thickets, especially where the soil is rich and moist.

LARGE PAD-LEAF ORCHID (Habenaria orbiculata)—July-August. Most striking feature of this 12 to 24 inch orchid: two large, fleshy, dark green leaves which lie flat against the ground, flowering spike rising between the two. Flowers spurred; usually greenish-white, whiter flowers being somewhat more striking. Earlier, only one leaf is present; with maturity both leaves form. Very rare; highly susceptible to pests. Look for it in deep, shaded woods where soil is acid and rich in humus.

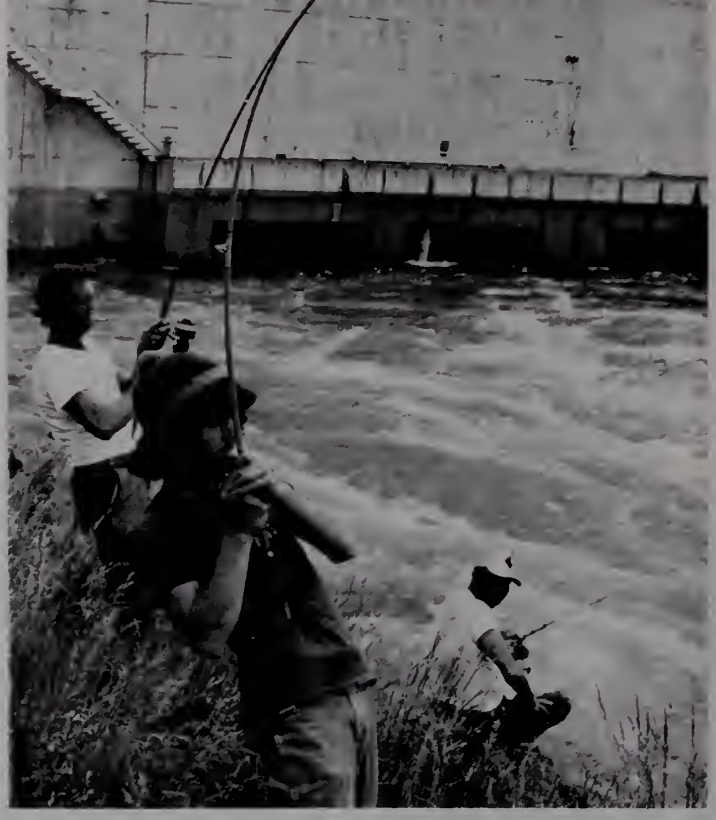
LILY-LEAVED TWAYBLADE (Liparis lilifolia)—May-July. Delicate looking. Found most often in small clumps along wooded edges of fields and banks of forested streams. Flowers: small and rounded; usually light brown though most are veined lightly with red. Entire plant may rise only four to eight inches above forest floor; hard to spot. Usually, over a dozen flowers grace central stalk, which rises from 2 shiny, basal leaves.

LESSER RATTLESNAKE ORCHID (Goodyera ophioides)—June-August. Rarest and smallest of at least 3 distinct species of Va. rattlesnake orchids. Flowers: small, white; found in nearly straight row on 2 to 5 inch stalk. The plant and related species derive common names from their leaf markings: white stripes against dark green background. Numerous leaves found primarily close to ground (having fewer white veins than other species, forming less of a quilted pattern). Found singly or in small groups in deep moist woods throughout mountains and piedmont.

NODDING LADIES' TRESSES (Spiranthes cernua)—July-October. Picturesque plant found throughout most of state; quite abundant in some areas. Numerous flowers, arranged in braided rows around the flowering stalk, create spiraling effect. Fragrant individual flowers may vary from light cream to pure white. Ten to 20 inch orchids found most often in open fields, meadows, and along dry, grassy slopes.

APPALACHIAN TWAYBLADE (Listera smallii)—June-August. Easily overlooked because of size. Vary in height from five to eight inches; two smooth, ovate, pointed leaves slightly above mid-stem. Green or brownish flowers blend with surroundings. Rare; found most often in Appalachian bogs and rhododendron thickets.

SPOTTED CORAL-ROOT ORCHID (Corallorhiza maculata)—August-October. More common of at least 4 species of coral-root orchids found in Va. All coral-roots lack chlorophyl; obtain sustenance from humus soil where they extend their subterranean stems. These saprophytic orchids are leafless, having only a few bronze scales near base of stem, which bears numerous whitish to purple flowers. Spotted coral-root rarely exceeds 6 inches in height; usually quite abundant in dry woods throughout much of Va.



TAILRACE STRIPERS

By BILL COCHRAN
Roanoke

SOME 70 miles upstream from the tailwaters of Kerr Reservoir, Leesville Dam throws a cement barrier across the Roanoke River, near the tiny village of Leesville, blocking the upstream spring migration of Kerr's famed landlocked striped bass. The stripers really don't have to go this far to spawn. Most don't. They cast their eggs and sperm to the current well below Leesville, particularly around the Brookneal area, about 40 miles above Kerr.

But an unusually large number the past couple of seasons have gone all the way to Leesville Dam. It is not an easy journey. There is the salmon-like challenge of great distance, of buffeting current, of roaring rapids, of shallow, rocky stretches. Urged on by the ineffable act of procreation, the stripers push upward and upward until they bump their nose against the flat concrete face of Leesville Dam.

It is interesting to speculate just how far these fish would travel upstream if Leesville and other dams weren't there. Surely some would go all the way to Roanoke, a total distance of more than 100 miles. Over a decade ago, when I first began fishing for and writing about Virginia's new landlocked striped bass, an elderly lady called to tell me that, years before, her father fished the Roanoke River below Vinton, just downstream from Roanoke (well before dam building days). He returned home with a giant, silvery fish that stretched all the way across the front of the buggy, with scales about the size of 50-cent pieces. After reading one of my articles on Virginia's new landlocked striped bass, the lady remembered the incident and was convinced that the fish her father had caught long ago was an ocean striper that had pushed amazingly far up into fresh water to spawn. I agreed. If so, that fish had to travel all the way from the flat, blue salt water of North Carolina's Albemarle Sound.

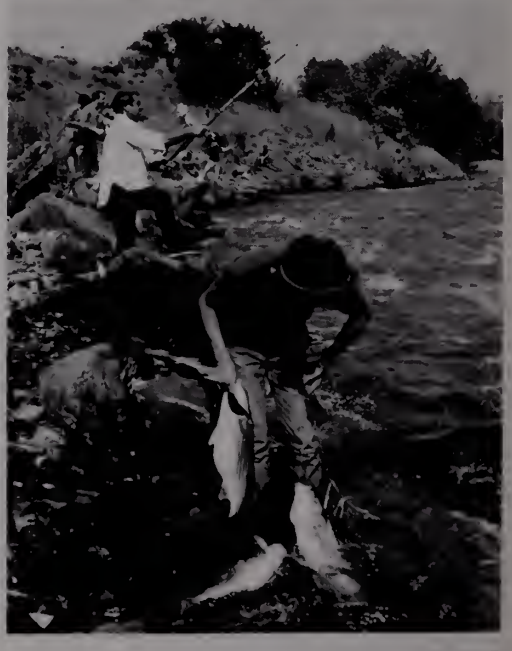
The same kind of super determination and strength is displayed by the stripers below Leesville Dam. It appears that the years they go the farthest are the ones when spawning conditions aren't quite right. The spring spawning season in 1973, for example, often was cold and wet. Filled with the ardor to spawn, but not finding the 60 degree temperatures they needed, some of the fish kept traveling upstream looking for warmth.

By mid-May, large numbers of them were stacked against Leesville Dam, and sometimes almost equally large numbers of fishermen were stacked along the shoreline flinging lures and baits to them. It was much the same way last spring.

All this leads to the point of my article: at times some very fine striped bass fishing can be enjoyed immediately below Leesville Dam. The same can be said of the churning waters below Kerr Dam near Boydton. However, this is feast or famine fishing. You can load up with big fish some days; be skunked on others. The sport is dependent upon weather and water conditions, on hydroelectric generation schedules and on the whims of the stripers themselves.

One day during a recent season, Jack Smith, a Roanoke striped bass enthusiast, and I traveled to Leesville only to find the water high and discolored, fed fat by spring rains that wash the red dirt of tobacco and corn fields toward the sea. It took few casts to realize our efforts would be fruitless.

(Continued on page 17)



Our lucky angler adds number 3 to his growing string of tailwater beauties.

FROGS AND TOADS of Virginia

By JOSEPH C. MITCHELL
Tempe, Arizona

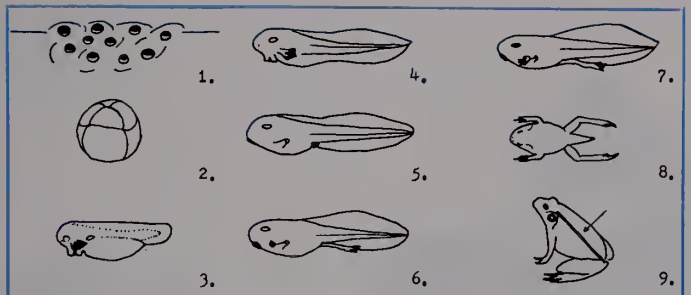
Members of the Order Anura, frogs and toads, are vertebrates which lead an amphibious existence. They require water in which to reproduce and for the aquatic stage in their life cycle when they are commonly called tadpoles.

Reproduction usually takes place in spring but may last into summer. At this time adults emerge from hibernation and seek a source of water, type of aquatic situation depending on the species. Males arrive first and begin calling, each species with its own characteristic call. Females, attracted to these calls, seek out males. She allows him to mount her back and clasp her body with his front legs. This is amplexus. Fertilization is external. The male sheds the sperm over the eggs as they are deposited in the water. Number of eggs varies with species. There may be 200 or 20,000 from a single female. As they are deposited, they are covered with a jelly-like substance which serves as a protective layer for the developing embryo. In some species the eggs are enclosed in a single jelly mass, some in several packets and others in long strings. They may float on the surface, settle on the bottom or become attached to objects such as aquatic vegetation. There the eggs go through stages of embryonic development—division of cells, development of organs, formation of gill circulation, etc.—until they hatch into the tadpole stage. Early stage tadpoles have a short body with two adhesive organs and two pairs of external gills. Later the gills are covered with a plate-like structure called an operculum. Last stages of development deal with formation of the legs, transition to lung respiration, and absorption of the tail. This is metamorphosis, the end result being the subadult frog.

Larval period varies with species, ranging from 12 days in the spadefoot toad to 3 years in the bullfrog. Generally, temporary-water breeders have shorter developmental periods than permanent-water breeders.

Tadpoles are omnivorous. Their food includes algae, particles of soft plant tissue and microscopic animals. At metamorphosis the diet changes to a completely carnivorous one. Adult frogs eat primarily insects, but spiders, millipedes and even other frogs are taken occasionally. In most cases the prey must be alive.

Frogs and toads are themselves food for many other animals. Herons, raccoons, weasels, snakes, fish and larger amphibians eat frogs. Some insects, like the water bug and water scorpion, eat larval stages. Man is an important predator, directly and indirectly. He preys on larger species for food and, by destroying habitats, eliminates whole populations.



DEVELOPMENTAL STAGES OF ANURANS. 1. Egg mass. 2. Division of cells after fertilization. 3. Development of organs, gills and tail. 4. Early stage tadpole. 5. Operculum covering the gills and hind limb bud. 6. Hind limbs developing and front limb bud. 7. Late stage tadpole with maturing limbs. 8. Absorption of the tail. 9. Adult frog showing dorsolateral ridge.

Amphibians are the only group of vertebrates which have no pests or species dangerous to man. None have a poisonous bite or stinger. They don't compete with man for crops and cause no serious illnesses. Anurans are economically important: they eat many insect pests.

Twenty-six species of frogs and toads are found in Virginia. The sizes given on distribution maps do not include leg length.

Acris, CRICKET FROGS. Small (⅝ to 1⅜ inches), slightly warty members of treefrog family. Do not climb. Remain in ground vegetation in or near permanent bodies of water such as small streams and ponds. Two species found in Va. Northern Cricket frog, *Acris crepitans,* distinguished from Southern Cricket frog, *Acris gryllus,* by clean cut rather than ragged dark stripe on rear of thigh. Former has webbed first toe and 1½ to 2 joints of the fourth free of webbing. Latter has first toe and 3 joints of the fourth unwebbed. Both have dark triangle between eyes, ground coloration of brown to green, and variable pattern of black, red or yellow on back. *A. gryllus* breeds from Feb. to Oct. and *A. crepitans* from Apr. to July. Eggs are laid singly; attached to grass stems or strewn on bottom.

Bufo, TOADS. Most terrestrial Va. anuran. Found from backyards to dry pine woods, where there is water in which to breed. Many found on roads during or after rain. Toads have dry, warty skin; one does not get warts from handling them. They do secrete a substance irritating to mucous membranes. Virginia has four species: Southern toad, *Bufo terrestris;* American toad, *Bufo terrestris americanus;* Fowler's toad, *Bufo woodhousei fowleri;* and Oak toad, *Bufo quercicus.* All but the last are similar. Rely on the combination of parotoid gland and cranial crest pattern for identification. *Bufo quercicus* has several pairs of black or brown spots and a light stripe on the back. Ground color gray to black. This is the smallest, reaching 1½ inches; the others reach 3½ inches.

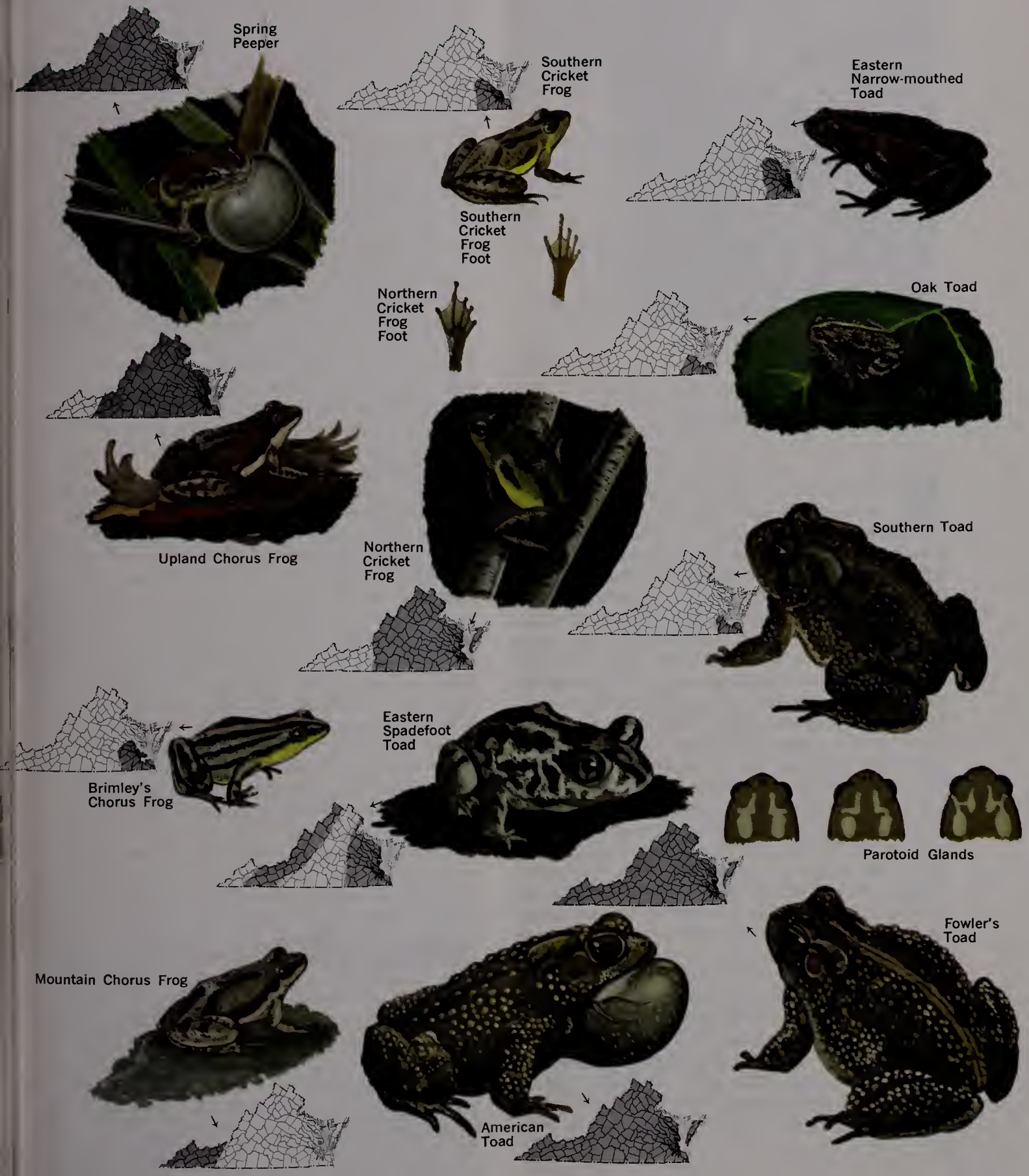
(Continued from page 24)

Mr. Mitchell (of Richmond, Virginia) is graduate student and instructor at Arizona State University.

VIRGINIA'S FRO

S AND TOADS

Illustrated by Carl Knuth



In Nature's Garden:
Illustrated by Lucile Walton

MAY-APPLE

(Podophyllum peltatum L.)

By ELIZABETH MURRAY
Charlottesville

MAY-APPLE is a rather showy wildflower. Stems appear above the surface in early spring with leaves wrapped round them 'like a rag wrapped around a cleaning rod as it emerges from the barrel of a rifle'! Stems grow more than a foot high with leaves gradually opening up at the tips like an umbrella; hence one of its common names, "umbrella plant." There are two kinds of stems. The flowering stems have from one to three, but usually two, leaves while the non-flowering stems bear only one. Leaves are smooth, glossy, and deeply cleft into arrow-shaped lobes which radiate from the stem. Both the generic and specific names refer to shape of leaves: *Podophyllum* is a contraction from the Greek *anapodophyllon* meaning 'duck's-foot-leaved,' and *peltatum* means 'shield-shaped.'

The flower comes out before May, but fruit is present in the month for which the plant is named. The flower could easily be overlooked since it is a single, small bloom, hanging downwards on a little stem which arises at the forked joint of two leaf stalks. Bud case is enclosed by three temporary bracts. Six sepals, also, are temporary or *fugacious:* they drop off as petals open, so that the flower has no outer coverings when in full bloom. There are six to nine white waxy petals, concave and beautifully networked with fine veins. Petals form a neat, saucer-shaped flower which looks almost artificial. There are twice as many stamens as petals; they have prominent yellow anthers arranged in a circle round a thick pistil. The flower has an odor which is described in one of my older books as "neither pleasing nor repulsive"! Fruit is a large, lemon-shaped, fleshy berry which ripens in July and is responsible for another common name, wild lemon. It is also known as hog apple, its fruit a favorite of pigs allowed to forage in the woods for food.

When perfectly ripe, the fruit is palatable to humans. Asa Gray, famous nineteenth century botanist, described it as "mawkish, eaten by pigs and boys." However, Dr. Fernald (who has revised and updated *Gray's Manual* and is himself a leading national authority on edible plants) states that it makes delicious jelly and marmalade, and a refreshing drink. HOWEVER, *Podophyllum* is one of those awkward plants which finds a place in the manuals of both edible *and* poisonous plants. Personally, I may stick to more conventional forms of marmalade, since all other parts of the may-apple plant except the ripe fruit are quite poisonous, especially the root. Mild preparations of the root have been used medicinally for their purgative properties which are so strong that slight deviations in dosage can have very serious consequences. Relatively recently it was found that the poisonous principle (called *podophyllin,* but actually containing a number of different chemical substances) inhibited cells from dividing. Earlier used in treating certain kinds of warts, it has possible value in cancer research. Cases of poisoning in humans have largely resulted from misuse in handling preparations of the roots. Such cases have suffered painful eye and skin inflammations, and ingestion of too much of the roots or leaves can cause severe gastro-enteric problems. Animals seem to stay away from may-apple since reported cases of stock poisoning are quite rare. Take care to distinguish between the roots of *Podophyllum* and those of Solomon's seal, *Polygonatum.* The roots look very similar except that those of Solomon's seal bear large, circular scars. Since the dried roots of Solomon's seal have some repute as a source of bread-like food, this could be critical. If you do not find scars, leave the fruit alone!

Podophyllum peltatum is also sometimes called "mandrake" although this name is more commonly reserved for plants of the genus *Mandragora* which have such a bad reputation mythologically. They, also, are violently emetic and are supposed to grow round gibbets, to have forked roots which resemble the human form, and to utter ghastly shrieks when pulled up from the ground.

May-apple belongs to the barberry family (Berberidaceae) which includes, in addition to may-apple and barberry itself, umbrella leaf (*Diphylleia*), twinleaf (*Jeffersonia*) and cohosh (*Caulophyllum*). All are herbs or shrubs with dissected leaves, rather large, fleshy fruits and flower parts arranged in threes.

Podophyllum is usually found in large showy patches in low woods, moist banks and clearings. It occurs all up and down the East Coast and west to Louisiana, Texas and Minnesota. Although it is reputedly on the conservation list of native plants which are decreasing alarmingly, much of it still seems to be around.

A few days later we returned, and the river had cleared somewhat. Since heavy surges of water were gushing from the gates of the dam, we used a couple of the surf-sized spinning rods Jack hand makes for fishing below Kerr and Leesville dams. I tied a hefty bucktail jig onto my line and began heaving it from the bank to the center of the water, where I let it bob downstream with the heavy current. On the second cast, a jolting strike jarred my big rod.

"Got one," I hollered to Jack.

Jack quickly reeled in his rig and grabbed the gaff he brings along for such occasions. But my fish wasn't about to tangle with the sharp end of a gaff. It fled rapidly downstream, ripping line from my reel.

"You'd better try to stop him," Jack cautioned. "If he gets downstream too far, you'll never turn him."

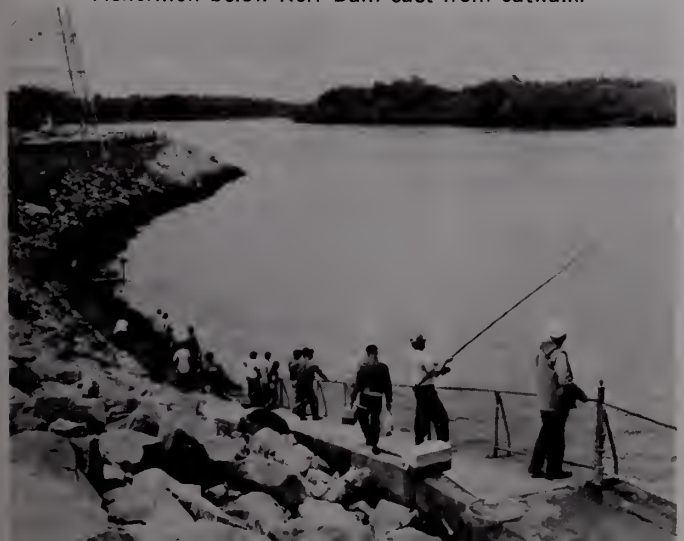
I set a hard drag and applied every ounce of pressure I felt my tackle could handle. It didn't faze the striper. Undaunted, he kept sizzling downstream, like a steam locomotive on a downgrade. Suddenly, everything went limp, my line, my rod, my heart. I reeled in to find the giant steel hook of the jig had straightened just enough to allow the fish to escape. How big was he? I like to think he was well over 20 pounds.

Before I could tie on a larger jig Jack was into a good fish. He skillfully played it to the bank, a husky 17-pounder. After that, it became one of those rare days when I couldn't do wrong. I consistently caught striper after striper until I'd landed eight. That was the limit then, but I released half of them. The limit below Leesville Dam now is four, having wisely been lowered to help preserve the spawning stock.

The outstanding day below Leesville recalled for Jack and me a similar outing at the tailrace of Kerr Dam a couple springs before. Jack, Ralph Key, Paul Garst and I landed nearly 300 pounds of stripers that day. All caught were over 20 pounds apiece, with Jack taking the largest, a 29 pound, 8 ounce lunker. We quickly filled our casket-size coolers to over-running and began releasing the big fish unharmed. Then, like birds filled with their prey, we basked in the sun along a fishing catwalk, bothering to cast only occasionally.

To transmit the belief that fishing always is like this

Fishermen below Kerr Dam cast from catwalk.



Jack Smith displays string of stripers he and author took below Leesville.

below Kerr would be a gross injustice. This is a specialized sport that can be tough, even downright frustrating, many times. You may catch 300 pounds one day, then the next half-dozen you may fail to get a strike. It is the potential, though, of 300 pound catches and of 30-pound-plus fish that lure many fishermen.

Much the same thing can be said of the Leesville tailrace fishing. I prefer to fish it during the daytime hours, roughly 9 a.m. to 4 p.m. when normally heavy surges of water gush from the gates of the dam, swelling the river below and promoting good conditions for casting a bucktail. Although it can vary somewhat according to water and weather conditions, usually the best striper fishing occurs below Leesville during the month of May.

The first couple hundred yards below the dam is a hotspot, and it is likely to be crowded with fishermen. A lightweight to mediumweight surf rod is used in order to gain the necessary casting distances. Last spring, increasing numbers of boat anglers began working the river for several miles below the dam, and some with outstanding results. Launching, however, is of the "pull your boat over the bank" type, and the stream is subject to severe, even dangerous, fluctuations.

Beneath Kerr Dam, schools of stripers normally move out of the depths of Gaston Reservoir and upstream to the base of Kerr in late April, with fishing action continuing through May, then reoccurring in the fall. The runs appear to be stimulated largely by the rich supply of baitfish below Kerr Dam.

The tailrace striper fishing was established at Kerr well before it was at Leesville, and as a result many of the successful techniques used there have been carried to Leesville. Much of the fishing is done from the bank, with surf-type casting outfits used to whip big one-to-three ounce bucktail jigs the distance needed to reach the fish. There are times at Kerr when this distance can be exasperating because the fish have an uncanny

(Continued on page 23)

Spring Turkey Hunt

By MARK MULLEN
Roanoke

SPRING means different things to different people: pretty flowers; warm weather; Easter and being out of school. But to me, it means spring turkey hunting in Virginia.

Although fall turkey hunting has been popular in Virginia for some time, spring turkey hunting started as an experiment over a decade ago and now is one of the fastest growing and most thrilling sports in Virginia. Nothing starts more adrenalin flowing in your blood than a double gobble of an old tom turkey, perhaps the smartest creature in the woods.

As the spring season approaches, a turkey hunter gets a seasonal disease called "Turkey Fever." One of the best ways to treat this is to get out and scout the area you plan to hunt, searching for droppings and scratching where turkeys have looked for food. If you are lucky and observant enough, you might see or hear one of the critters. In the spring season, a tom turkey will put on one of the darndest exhibitions you ever saw. He will strut and puff out, extending and dragging his wings. His wattles become an angry crimson, his gobbles enticing the hen to show herself and warning other gobblers to stay clear.

While a friend and I were hunting grouse in Franklin County one fall, I noticed a lot of fresh scratching. Since fall turkey season had already gone out, Timmy and I set up for the spring turkey season. We went scouting and found where turkeys were known to roost.

Finally opening day eve arrived. We went back to where we had been scouting and both of us picked our blinds relatively close together because I would be the one doing the calling. After that we went back to my house and got all our gear ready for the next morning. We turned in at 9:00 p.m. to be able to get up at 4:30 a.m.

After about a fifteen minute drive, we came to our chosen spot. As we left the car we heard the underbrush cracking, so evidentally we had spooked a deer. We both had camouflage paint on our face, and both of us wore camouflage clothing. As we made our way out the ridge, light was beginning to show in the east, and we must have traveled a hundred yards when we heard a turkey gobble. We didn't try to go after him because we didn't want to spook him. As hard as it was, we had to ignore him to keep him from spotting us. We found our blinds located a day earlier and took them. It was almost light now so I slipped two magnum 4's into my old 12 gauge Remington double barrel and Timmy loaded his 12-gauge single shot.

We heard a soft gobble. Although this bird was still on his roost he wasn't too far away. All of a sudden everything was quiet; the turkey was off his roost. He gobbled again. This time I answered with a hen mating yelp. He double gobbled. I waited three or four minutes and then clucked. He gobbled so fiercely it made my hair stand on end. About that time another gobbler put in his bid to the left of me. Then all was quiet.

I knew they hadn't seen us, but we moved up the ridge and then to our left and then back down. Again I called and one of them answered. I knew not to call too often. I waited about five minutes and clucked again. That did it. There he was—about sixty yards from me. Since I was using a box-call, I could put it on the ground and still produce a perfect cluck. Everything was happening too fast. The turkey went up above me and I clucked like saying, "Come back here honey!" That cluck did it! There he was, about twenty-five yards from me. When he moved behind a tree, I got my gun up. As he came on the other side, I killed him with a single blast of magnum 4's. It had taken us an hour and fifteen minutes from the time we got in the woods to kill him. I put my number 1 turkey tag on him and carried him to the car.

Timmy and I then went to McFarland's Texaco to check him in. He weighed 18 pounds 8 ounces, and had an eleven-inch beard. That day we left the woods with our spring turkey fever under control for awhile. We also had the satisfaction of knowing that our next turkey dinner did not come in a plastic bag.

Virginia Spring Turkey Harvest

County	1972	1973	1974	County	1972	1973	1974
Accamack	0	0	0	Lee	0	0	CLO
Albemarle	63	78	64	Loudaun	50	59	56
Alleghany	54	53	55	Louisa	34	37	32
Amelia	71	43	34	Lunenburg	25	23	29
Amherst	44	38	46	Modison	2	7	5
Appamattax	32	31	26	Mathews	0	0	0
Augusta	96	76	82	Mecklenberg	5	2	6
Bath	80	61	53	Middlesex	1	5	1
Bedford	4B	52	36	Mantgamery	39	27	34
Bland	90	80	57	Nansemond	0	0	0
Botetourt	64	51	43	Nelson	70	58	34
Brunswick	18	22	30	New Kent	9	12	7
Buchanan	0	0	0	Northampton	0	0	0
Buckingham	40	26	31	Narthumberland	0	0	0
Campbell	13	21	14	Nottoway	51	33	30
Caroline	49	44	34	Orange	24	22	27
Carroll	7	7	2	Page	22	29	19
Charles City	19	16	15	Patrick	B	0	7
Charlotte	43	34	36	Pittsylvania	16	19	23
Chesapeake	0	0	0	Powhatan	28	22	16
Chesterfield	54	39	26	Prince Edward	40	37	29
Clarke	11	10	21	Prince George	11	10	8
Craig	43	23	42	Prince William	60	45	35
Culpeper	26	25	24	Pulaski	37	28	17
Cumberland	45	42	28	Rappahannock	19	11	16
Dickensan	0	0	2	Richmond	0	0	2
Dinwiddie	81	63	53	Roanake	13	B	12
Essex	23	25	21	Rackbridge	57	54	74
Fairfax	11	17	CLO	Rockingham	76	67	63
Fouquier	77	B1	72	Russell	9	1B	4
Floyd	2	1	3	Scatt	0	11	11
Fluvanna	14	13	10	Shenandaah	54	46	36
Franklin	3B	37	30	Smyth	87	62	46
Frederick	54	56	51	Southamptan	6	5	7
Giles	47	46	41	Spatsylvonia	22	20	17
Gloucester	1	3	1	Stafford	24	17	10
Goochlond	24	17	13	Surry	10	6	10
Grayson	69	42	41	Sussex	48	38	37
Greene	3	9	2	Tazewell	21	21	15
Greensville	9	13	4	Vo. Beach	0	0	0
Halifax	21	34	22	Warren	39	57	32
Hanover	13	15	14	Warwick, N. N. & Hampton	0	0	0
Henrica	5	10	10	Woshington	20	10	9
Henry	9	10	9	Westmoreland	3	3	0
Highland	33	41	46	Wise	0	12	17
Isle of Wight	0	0	0	Wythe	116	118	74
Jomes City	1	1	1	Yark	4	6	11
King & Queen	49	36	25	Eost of B. R.	1526	1407	1197
King Geargе	6	2	4	West of B. R.	1240	1115	1002
King William	6	13	7	Stotewide	2766	2522	2199
Lancoster	00	0	0				

Save Our Streams —Adopt One!

A Citizen Action Program The Izaak Walton League of America

ARE you tired of seeing our streams treated as sewers, ditches and garbage dumps? Have you wished there were something you could do to put a stop to this degradation? Well, the Izaak Walton League of America is giving you a chance to save a stream by adopting one. While it is doubtful that you can save a stream single-handedly, you will become the stream's first line of defense—its voice protesting all the indignities it might be subjected to.

The program works like this: When you decide to adopt a stream, or more realistically a portion of one, you or your group may officially register as caretaker and defender of the designated portion. A complete SOS fact pack with registration forms is available for $2 from the Izaak Walton League of America, 1800 North Kent Street, Suite 806, Arlington, Va. 22209.

The first task is to complete a stream survey on the forms provided, documenting the good and bad aspects of your stream section. Once its strengths and weaknesses have been tallied, it is time to concentrate on improvement of existing conditions. If litter is a problem, a cleanup day by your own group, a local Scout troop, a high school ecology club, an adult conservation club, or all of these is in order. Proper publicity can alert the community that the stream now has a custodian who plans to see that it is treated with respect. If erosion is a problem, properly supervised construction of erosion control structures by the above groups may help check it. A visit with local planners will give some insight into what plans local government has for your stream.

If pollution is a problem, a visit to the State Water Control Board office in your area will shed some light on how serious it is and what government is doing about correcting it. A local bond issue to finance needed sewage treatment works may need support. An offending industry may need pressure from streamside residents to clean up its discharge. Water samples collected by or under the advice of your Water Control Board can help pinpoint the problems.

Perhaps poor fishing is one of the stream's deficiencies in spite of good water quality. Advice from your local fisheries biologist can put you on the right track toward improving it. Perhaps fish habitat can be improved with structures constructed in the channel or along the banks. Perhaps improved access would let more people enjoy the stream's resources. The cooperation of streamside landowners and public agencies is essential in developing a stream's potential.

Wildlife habitat or fishing might be threatened by proposed development, a point that can be brought out at public hearings on rezoning or approval of construction permits. Maybe channelization is planned. Perhaps sediment control laws are not being obeyed, or maybe planners need to make more realistic allowance for increased runoff.

You will very soon get to be an expert on your own little section of stream, and this firsthand knowledge will go a long way toward giving your comments, if well researched and logical, equal weight with those of experts with more credentials. Each encounter will strengthen your reservoir of knowledge about "your stream." Proper contact with the news media gets publicity for your stream's problems that might not be possible if your interest in the situation were more casual. The instructions are all there in "A Citizen's Guide to Clean Water" and other publications in the SOS kit.

This should be an excellent project for high school classes, ecology or science clubs, Scout troops, church groups, sportsmen's clubs, women's clubs, civic clubs or just about anyone interested in bettering their community. There is no minimum or maximum area required. It can be 100 feet or 100 miles of stream. All

(Continued on page 27)

CITIZEN ACTION KIT ENCLOSURES

Save Our Streams registration card

Save Our Streams Action Guide, including 3 suggested project areas

Copy of "A Citizen's Guide to Clean Water," the Izaak Walton League's new manual to help you monitor the federal water pollution control act permit process.

"Save Our Streams—Adopt One" bumper sticker

Brochure describing Maryland's successful Save Our Streams program

Stream survey forms

Save Our Streams project promotion guide

BOATING SAFETY: TAKE ONE

A trio of singing pelicans and two life-size nautical puppets are late additions to the Game Commission's safe boating team, part of a spring safe boating campaign.

In 1974 the Richmond advertising firm of Webb & Athey, Inc., contracted with the Virginia Commission of Game and Inland Fisheries to produce a series of boating safety spots for radio. Resulting productions with catchy jingles and humorous dialogue were a big hit. One, "Ballad of the Mary Lou," was recognized with Certificate of Merit for regional and national radio; the series placed in International Broadcasters' competition.

Original idea of using puppets was developed by Ken Collins Associates, Inc., of Richmond, to adapt existing radio safe boating material for television. They worked with 212 Ltd. of Richmond for design and development of the characters, later filmed in a studio by Colony Productions of Colonial Heights, Virginia.

Actual construction of the colorful puppets was executed by Terry Snyder, designer for the Baptist Foreign Mission Board, SBC, who also worked as a puppeteer. Another who helped give life to the puppets was puppet hobbyist Bob Amundsen of Newport News.

Through two days of filming by Colony Productions to complete three 30-second television public service announcements, long hours and hot lights affected crew and puppeteers. Members of the camera crew began talking to puppets, not operators. "Are you tired; would you like a break?" Puppet would reply, "Yes."

Ken Collins, president of Ken Collins Associates, Inc., primary contractor for the project, said, "We've done a lot of unusual things for clients filming television material, but this is the first time we've seen grown men talking to a bundle of terrycloth and stuffing."

Colony's unusual technique of photographing puppets as if they were humans adds to realism. They were photographed from several angles on three-dimensional sets; not just one straight shot from the front against a simple background. This artistic touch added by cinematographer Bill Peterson makes the puppets seem live.

Everyone involved with the project, particularly on the creative and production side, has been pleased with the finished product—potentially award-winning material. Watch for these TV spots this summer.

Above: Colony Productions' Dave Califf.

Far left: Puppeteers Terry Snyder and Bob Amundsen.

By JOHN W. TAYLOR
Edgewater, Maryland

Canebrake Rattlesnake

THE canebrake is a pale, lowland counterpart of the timber rattler. Its range covers a broad portion of the southeastern coastal plain, from Virginia south to northern Florida and west to Texas and Arkansas. Locally, it has been found from the Fall Line east, through the Dismal Swamp, and north to the mouth of the James River.

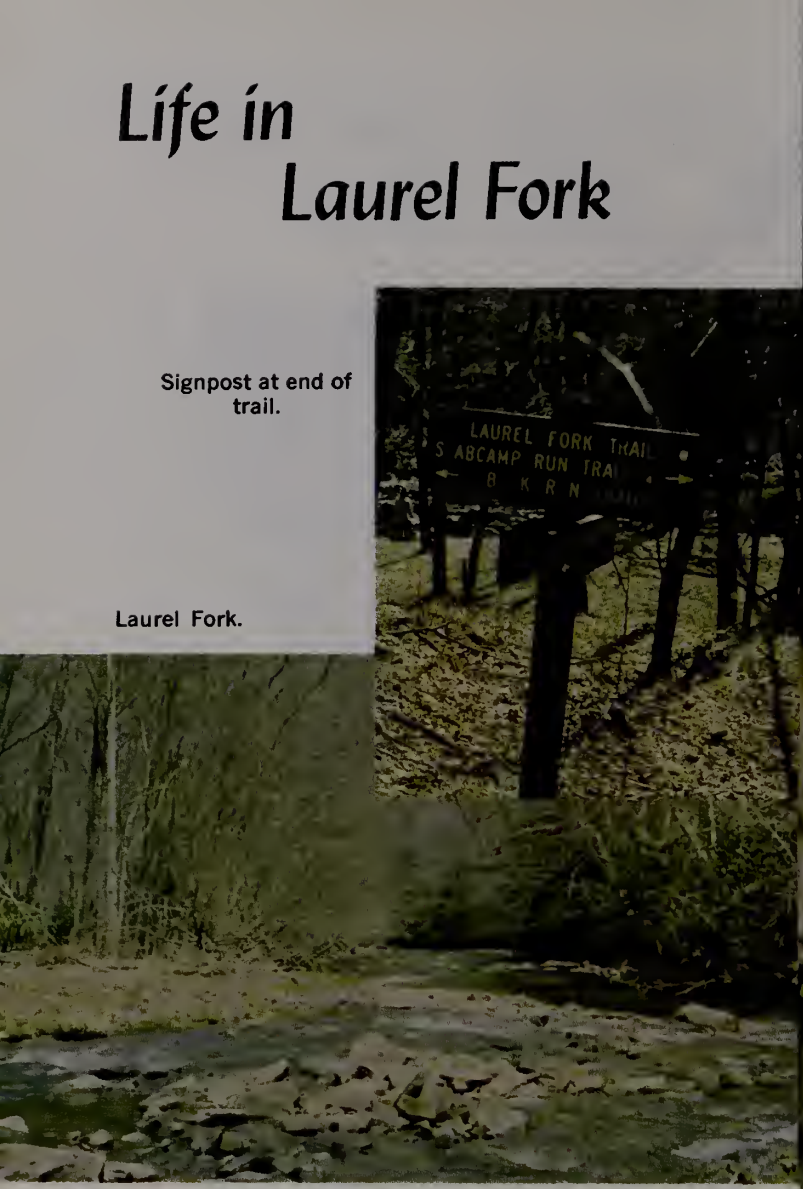
The name "Canebrake" derives from its association with thickets of cane (Arundinaria), a bamboo-like plant of the southeastern bottomlands. Its pure stands, where they are extensive, are nearly impenetrable. These big canebrakes, like the rattler, have all but disappeared, having been reclaimed for agriculture, burned and cleared for grazing use. Two species of cane, both fairly common where conditions are favorable, are present in Virginia.

The snake is by no means confined to this habitat, however. Primarily a creature of swamps and bottomlands, it is found as well in drier situations, such as old fields, and even pine forests. So, much territory suitable for it still exists in southeastern Virginia. It is likely, though, that the Dismal Swamp holds the only significant population; herpetologists believe it be almost eradicated elsewhere in the State.

The general body color of the canebrake rattler is pinkish gray or tan. The back is marked with black chevrons, which become bandlike near the tail. There are blotches on the sides as well, and the entire body is flecked with gray. Running down the back is a dark brown stripe, a good identification point, since no other rattlesnake is so marked. Also distinctive is the dark stripe behind the eye.

Some canebrakes grow large, reaching eight feet, and they are easily aroused to anger. Often they will coil and strike when escape would seem more plausible. Such behavior does little to dispell the instinctive alarm and fear on the part of the human intruder, whose thoughts would likely not be directed towards ecological relationships at the time of encounter. Still, an attempt should be made to instill in the public mind the concept that even snakes have a vital place in our natural heritage.

Life in Laurel Fork

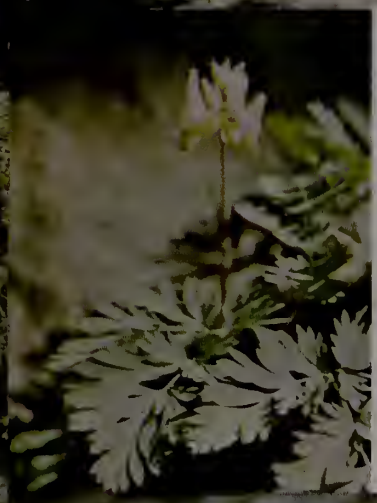


Signpost at end of trail.

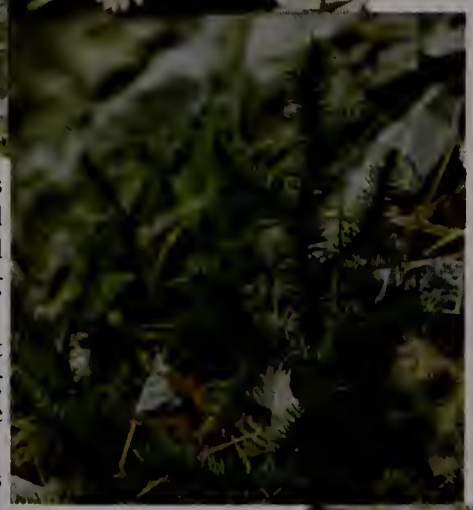
Laurel Fork.

Locust Spring Trail.

Article & Photos
By PAUL H. BRATTON, JR. & JUDY M. PRICE
Deerfield



Squirrel-corn.



Wolf's-claws (club-moss)

ALONG the trails and streams and into the depths of the sun-and-shadowed woodland, the Laurel Fork area is full in life and beauty. It is wild and gentle, still holding the peacefulness of land being protected by man rather than altered or destroyed.

This unit of the George Washington National Forest is located at the corner of Highland County, bordering Pendleton County, West Virginia. No roads transverse its 23 square miles.

A maze of leather trod paths and flowing streams run to the heart of the area where the waters gather. Both the Locust Spring Run and the Buck Run trails begin at the Locust Spring Recreation area, a grassy clearing bearing wooden picnic tables, stone fireplaces, and an open log shelter. These trails wind downward until they fall into the deep river hollow and merge with the Laurel Fork trail. There the rhododendron tangles border the river and climb the steep hills that ascend on either side.

The Locust Spring Run trail is approximately three miles long, from the recreation area at its origin to the trail's base. At its height are strong stands of red spruce and at its foot, the scattered yellow birch. It is

Trillium.

adorned with color and fragrance from spring to autumn, and with glossy evergreens throughout the year.

In the early spring, before the hardwoods bear buds or leaves, small pale blossoms adorn the paths. The wood anemone and spring beauty open early to feel the last touches of winter and the first caresses of spring. With them, the trailing arbutus reveals her fragrant flower clusters among the patches of leathery evergreen leaves.

Along the rocky banks of Locust Spring Run, wild ginger and ramps grow. In April the small furry flower of the ginger rolls back its three calyx lobes exposing six miniature petals. The heart-shaped leaves are luminous in the sun. They rise in pairs, forking from a single stem, and in the crotch the frosty-pink flower is borne. The rootstock of the wild ginger plant is thick and easily pulled from the soil. It can be ground and used in place of the spice ginger of commerce, or cut into pieces and candied.

The roots of ramps, or wild leeks, may also be used as food, like the cultivated onions. Their flavor is a light blend of garlic and onion. The bulbs are ripe for gathering as early as April, when the smooth leaves are grown. As the season wears on, the leaves wither and are replaced by an umbel of simple white flowers that remain into the heat of summer.

Laurel Fork is studded with bloom from the last snows of dying winter to the first of the season's rebirth. It boasts red trilliums and bleeding hearts, moccasin flowers and violets. During May, in the cool and deep woodland, a jack-in-the-pulpit solemnly stands. During June and July, along the banks of the Laurel Fork River, masses of great rhododendron flowers come into bloom. And through August and the autumn, the asters show their violet rays.

Flowers are the obvious as ferns are the subtle. Ferns flourish in Laurel Fork. Their beauty is quiet and simple, and revealed in their fronds. Some are lustrous and hearty, and some are lacy and frail. Those that are evergreen stay the winter, lying close to the ground to seek comfort from the bitter winds. They and the deciduous ferns send up coiled and sweatered fronds in the spring to unroll and embellish the forest for another year. The Laurel Fork area abounds in them all.

It also supports a number of clubmosses. More than five species of these small, evergreen ground pines can be seen weaving along the trails and streams and up into the timberlands. Though they are becoming rare in many areas, they still thrive in Laurel Fork.

The area's elevation ranges between 3,000 and 4,000 feet. This elevation and the land forms, and so the climate, has produced a more northerly-inclined forest. The unusual diversity of plant life found there is matched by other forms of life. The area comprises one of the southern-most ranges of the snowshoe rabbit. These are also known as varying hares because their brown coats change to a winter white as autumn ages, and back to brown with the spring. Snowshoe rabbits are abundant and widespread through Canada, Alaska, and the more northwestern states. But in Virginia, only Highland County can claim them as inhabitants and Laurel Fork provides them with a fitting home.

Laurel Fork also harbors a large beaver population. The beavers have dammed shallows and sheared logs to construct water lodges for their homes. Their ingenuity for design is beneficial not only to them, but to the fish as well. The pools created by the beavers, and those of nature, are speckled with rainbow, and brown, trout. Buck Run, Slabcamp Run, and an upper section of the Laurel Fork waters are regularly stocked by Virginia's Game Commission to complement the native trout population.

Through the woodlands and clearings are deer and squirrels, and across them pass ravens and hawks. Sharing both the air and the ground are turkeys and ruffed grouse. Whether they are drawn to the furtherest reaches of the pine or the tightest mesh of laurel twinings, Laurel Fork holds for each.

Of the Laurel Fork unit, 8,310 acres have been proposed for a wilderness area. Although deleted from the Eastern Wilderness bill as reported out of the Senate Interior Committee, it may be included in a later bill. If this area does receive the protections of the Wilderness Act, it will be preserved and allowed to revert to a virgin forest. Mining and logging would be prohibited as well as the building of any further roads.

There are economic and aesthetic reasons why wilderness should be preserved; some are practical and some spiritual. Eventually it comes down to a respect for our native land, and the interplay of forces that sustained it long before there was a commonwealth called Virginia, and will sustain it long after.

Tailrace Stripers **(Continued from page 17)**

way of hovering just beyond normal casting distance. Recently, there has been increased interest in boat fishing at Kerr since the restricted boating area below the dam was decreased from 800 to 600 feet.

Despite the hard work it often takes to catch a striper below Kerr, the area remains a major attraction to many fishermen because it annually has produced the largest landlocked stripers in the state. For a time, hardly a season went by without the striper record being broken by a Kerr tailrace fish until now it has pushed well above 30 pounds.

Below Kerr and Leesville dams are but two of a growing number of spots in Virginia where landlocked striped bass can be caught. In fact, the experienced striper fisherman now can catch these big fish somewhere just about every month of the year. But when these two spots are hot, that is, when the water is right and the fish are there to feed, few places concentrate this fine sport fish in more impressive numbers.

Breeding dates: *B. terrestris*, Mar. to Sept.; *B.t. americanus*, Apr. to July; *B. w. fowleri*, Apr. to Aug., usually later than the American toad in a given locality: *B. quercicus*, Apr. to Sept. Eggs are submerged on bottom in long strings. Large females may lay up to 8,000.

Gastrophryne carolinensis, EASTERN NARROW-MOUTHED TOAD. Only member of this genus in Va. Hard to find due to small size, 7/8 to 1¼ inches, and because it stays well hidden in vegetation around ditches and puddles. Outside breeding season they may be found under logs or burrowed in soil. Color varies from gray to reddish; has broad stripe on back and mottled belly. Small pointed head characteristic of species. Breeds May to Sept. 800-900 eggs deposited in packets or in surface film.

Hyla, TREEFROGS. Inhabit various types of vegetation above ground. Only few species venture into treetops. Habitats range from temporary puddles to edges of ponds to moist woods. Development of adhesive discs (toe pads) and long limbs has allowed them to adapt to arboreal existence. Virginia has seven species. All except one breed late spring through August. Green treefrog, *Hyla cinerea*, varies in shade of green with temperature and has light stripe on each side. Eggs are in small packets attached to floating vegetation. Size: 1¼-2¼ inches. Spring Peepers, *Hyla crucifer:* among first frogs to call in spring. Breed March through May. X mark on light brown to black back. Eggs laid singly, submerged among bottom vegetation. Size: ¾-1¼ inches. Pine Woods treefrog, *Hyla femoralis:* identified by row of light colored spots on rear of thigh. Body color varies from reddish-brown to shades of gray. Eggs in small groups deposited as surface films or attached to grass stems just below it. Size: 1-1½ inches. Barking treefrogs, *Hyla gratiosa:* usually green with many dark spots. Larger, more stout than others. Eggs laid singly on bottom. Size: 2-2⅝ inches. Squirrel treefrogs, *Hyla squirella*, exhibit many color variations. May be brown when picked up, green when put in jar. Usually identified by dark spot or bar between eyes. Eggs deposited singly on bottom. Size: ⅞-1½ inches. Northern Gray treefrog, *Hyla versicolor*, and Coastal Plains Gray treefrog, *Hyla chrysoscelis*, are identical in appearance; separated into two species on basis of call types, one having higher frequency. Both gray with varying amounts of black. Best to refer to them as just Gray treefrogs. Their separate distributions in Va. are not known yet; in combination they occur statewide. Eggs in scattered packets attached to surface vegetation. Size: 1¼-2¼ inches.

Limnaoidus ocularis, LITTLE GRASS FROG. Only member of the genus and smallest frog in North America, ranging from 7/16 to ⅝ inches. Color: tan to green with dark stripe on each side passing through eye. Prefers low vegetation along edges of ponds and cypress lakes. Breeds spring to Sept. Eggs deposited singly in vegetation or on bottom.

Pseudacris, CHORUS FROGS. Announce coming of spring. First warm rains bring them out in numbers. Breeding usually lasts through May. Chorus frogs are ground dwellers, ordinarily found in grass or other short vegetation in or near shallow temporary pools. Virginia has four species all averaging about 1¼ inches. Eggs are usually in masses attached to plants. Mountain Chorus frog, *Pseudacris brachyphona*, has triangular patch between eyes, white upper lip and two curved markings on brownish back which looks like an X not meeting in the middle. Brimley's Chorus frog, *Pseudacris brimleyi*, is also brownish with white lip but has 3 dark brown stripes down back and black stripe on each side passing through eye. Upland Chorus frog, *Pseudacris triseriata*, resembles Brimley's Chorus frog except the 3 stripes are narrower and broken into dashes. All stripes are same color. New Jersey Chorus frog, *Pseudacris nigrita kalmi*, likewise resembles Brimley's in having three stripes; however, they are broader and the same color as side stripes. Not broken up as in Upland Chorus frog. Refer to its locality when trying to identify it.

Rana, TRUE FROGS. Includes some of most familiar species. All are smooth skinned, lack webbing between fingers and have webbing between toes. Some species distinguished by presence, absence or length of dorsolateral ridge (raised longitudinal fold of skin). Six species found in Va. Bullfrog, *Rana catesbeiana*, is largest, reaching 8-9 inches. Prefers larger bodies of water than the others. General coloration: greenish-brown; belly whitish with some gray mottling; no dorsolateral ridge. Breeds May to Aug. Eggs in large surface films. Green frogs, *Rana clamitans melanota:* similar to bullfrogs but smaller (2-4 inches), have green upper lip and a dorsolateral ridge that extends into groin. Prefers small streams, ditches and ponds. Breeds May to mid-Aug. Eggs in a surface film. Pickerel frog, *Rana palustris:* two parallel rows of squarish spots down back, bright yellow or orange on underside of hind limbs, and dorsolateral ridge that extends into groin. Inhabits cool waters such as streams and springs. Breeds March to May. Egg masses attached to submerged vegetation. Size: 1¾-3 inches. Leopard frogs, *Rana pipiens:* distinguished from others by 2 or 3 rows of spots on back and a dorsolateral ridge that extends into groin. Ground color brown to green. Inhabits permanent water. Breeds April to June. Eggs in flattened sphere attached to submerged vegetation. Size: 2-4 inches. Wood frogs, *Rana sylvatica*, have dark patch behind each eye on ground color of pinkish-brown to green to dark brown. Found in moist woodlands. Breeds March to May. Eggs in globular mass attached to submerged vegeta-

(Continued on page 27)

ORIENTEERING

By SHERWOOD F. PRESCOTT, JR.
Springfield

THE big buck bolted off to my left and startled me so that I stopped and watched him disappear. As the sound of breaking twigs and thrashing leaves turned to silence, I turned back to running. I was deep in the Virginia woods, between two control points in an orienteering competition—a new sport spreading like wildlife throughout the United States.

Orienteering is a cross-country race in which you navigate across difficult and unfamiliar terrain using compass and detailed topographic map. Circles indicate precisely the location of various control points. On the ground, these control points are marked by red and white nylon bags. With each bag is a special coded punch. You must find each control point in the proper sequence and punch your scorecard. The runner home in best time, with properly punched scorecard, wins.

Events are categorized by experience, age, and sex. The most difficult course, Blue Elite, can range between five and seven miles with 10-12 control points. A beginner's course, White, will run two to three miles with four to six controls. Both individual and team events are normally included in a competition.

Beginnings of orienteering as a competitive sport are traced back to Scandinavia in the late 1800's. Major impetus came from its use as a military training method. This evolved into a new sports activity designed to maintain interest in track and field by using the natural environment of Sweden, with its forests, hills, and lakes. Virginia, like Sweden, has the beautiful natural environment which sets orienteering off as a sport for the nature lover. Orienteering is a marvelous outdoor activity which enables you to get close to the wonderful world of nature and explore its hidden secrets.

You step briskly through the cool, murky, ankle-deep water of a darkened marshy area wondering what creatures lurk below. The loud, slapping splash that echoes from the streambed to your right, conjures up visions of the most hideous denizens of the deep. Saplings stripped bare of bark, and carefully gnawed until the ever-diminishing diameter of the lower trunk could no longer bear the burden, remind you that beavers have warning signals all their own.

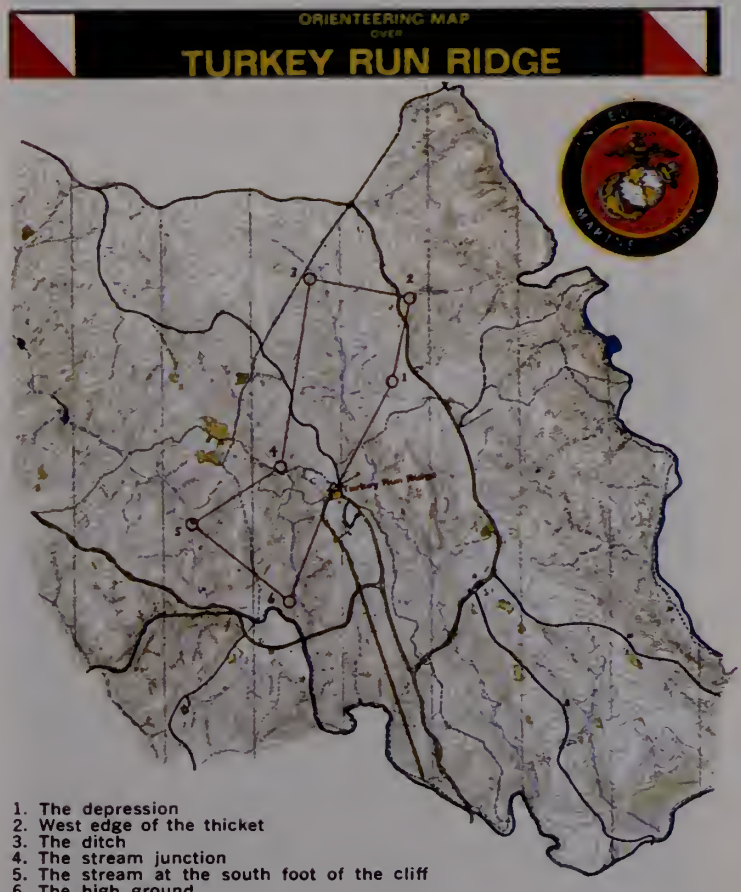
A large oak has been felled by these industrious creatures across a stream. The remarkably symmetrical circle of chips and shavings which surround the now pointed stump of what was once this great oak catches your attention as you jump up on the horizontal trunk. This day your feet will stay dry, thanks to those fellows with the slapping tails.

Orienteering came to the United States in 1946, when Bjorn Kjellstrom, the "father of orienteering" in North America, organized a race in Indiana and publicized the event through Boy Scout leaders. The sport did not flourish in the United States until 1967 when the Physical Fitness Academy at Quantico, Virginia, sent representatives to Canada to observe and develop a program for the U.S. Marine Corps. In 1969, a U.S. Armed Forces Orienteering Team was sent to the World Orienteering Championships in Switzerland. At Southern Illinois University, in 1970, the 1st U.S. Orienteering Championships were held.

Last October, Virginia's own Quantico Orienteering Club hosted the 4th U.S. Orienteering Championships in the beautiful Northern Virginia countryside. Although the participation did not approach the 14,000 competitors found in a recent Swedish competition, runners did span the ages from fifteen to fifty. Geographic locations from Canada to Georgia and west to California were represented. The U.S. Orienteering Federation in Athens, Ohio, which numbers over 3,000 members across the country, sanctioned the event. New U.S. Champions, many from Virginia, were crowned in all categories.

Orienteering has an appeal for the young and old,

(Continued on page 27)



1. The depression
2. West edge of the thicket
3. The ditch
4. The stream junction
5. The stream at the south foot of the cliff
6. The high ground

RALPH WEAVER

Commissioner, Sixth Congressional District

Text and Photos By F. N. SATTELEE
Information Officer

AS a boy growing up in Stuarts Draft, Virginia, Ralph L. Weaver remembers vividly the chores assigned to him by his father. The elder Weaver owned and operated two farms and was the proprietor of a feed store and a hatchery which produced about 60,000 chicks per week.

Every Monday and Thursday morning from the time that he was in fifth grade until he was a sophomore in Stuarts Draft High School, Ralph was required to be at the hatchery promptly at 4 a.m. There, from the time that he arrived until the mail train departed at 8:30 a.m., he helped to prepare the chicks for shipment. Then he went on to school.

The final two years of his high school career were spent at Eastern Mennonite in Harrisonburg. Following graduation he attended Purdue University for a year, majoring in animal husbandry. Then at the outbreak of World War II and the drafting of the manager and assistant manager of the hatchery, Ralph was called home to help his father. Later, Ralph was drafted but not called to active duty.

With the ending of the war he resumed his studies at Purdue and eventually transferred to Ohio State as the school was considered to have one of the best poultry departments in the nation.

In 1950 he returned to manage the hatchery. However, he was first required to work for a year on the turkey farm in a form of apprenticeship which prepared him for this task. Ralph later bought the hatchery but in 1958 sold the business in order to form the Weaver Insurance Agency, which is located in Waynesboro, Virginia, and of which he is president.

In addition to being one of the business leaders in the community, Ralph is extremely active in civic endeavors. He is past president of the Virginia Poultry Federation and the Shenandoah Life Underwriters Association, the Waynesboro Game and Fish Protective Association, and is currently a director of the National Bank & Trust Company and of Laurelville Church Center in Mount Pleasant, Pennsylvania, just to mention a few of his many activities.

Ralph was appointed to be Sixth Congressional District Game Commissioner in July of 1971 by the then Governor Holton. He is married to the former Beverly Campbell of Harrisonburg, Virginia, and the Weavers have two children: a boy, Darrell, and a daughter, Jana.

All of the Weavers are fond of the outdoors and outdoors sports. They are avid tennis players, skiers (both water and snow), and they all hunt and fish. During a recent season he and the two children each harvested a buck deer and all members of the family bagged turkeys. Last year his wife and the children each got turkeys. For his daughter it was the 13th turkey she has bagged since she began hunting at a very early age. Currently Ralph and both of the children are certified Virginia Hunter Safety Instructors.

Being able to work with the personnel from the Game Commission and with the general public to improve hunting, fishing and game management now and for future generations is the most rewarding aspect of his work as a Commissioner.

The Weavers make their home on a 20-acre farm at Stuarts Draft, and they attend the Springdale Mennonite Church in Waynesboro.

men and women, serious competitor and casual hiker. The Quantico Orienteering Club meets regularly every week in Virginia woodlands at the Marine Corps Base at Quantico, Fort Belvoir near Alexandria, or Prince William Forest Park. These locations contain the variety of terrain features—trails, streams, marshes, ridgelines, hills, ravines, woods, and open fields—that contribute greatly to the enjoyment of orienteering. Such terrain can be found throughout Virginia convenient to even the most heavily populated urban areas.

Growing popularity of the sport in Northern Virginia is illustrated by a monthly program in Family Orienteering that has been initiated by Arnold Simmons, Chief of Urban and Environmental Activities at Prince William Forest Park. With an assist from the Quantico Orienteering Club, Park Rangers Chet Hamilton and Gary Smith provide a program of instruction for beginners. Compasses are provided and the 1:20,000 scale map used was prepared by the 1972 Swedish Military Team of Orienteering especially for the Quantico Orienteering Club. Serious competitors wear special shoes and running suits, but novices seen at Prince William on a Sunday Family Orienteering course wear more comfortable and convenient clothing—sneakers, jeans, long-sleeved shirts.

The main concern of most novice orienteers in Northern Virginia is an unexpected meeting with a copperhead, which are plentiful in the area. In all honesty, I have never seen a snake while in an orienteering event. Once while setting an orienteering course in Prince William Forest Park, I glanced down as my right foot hit the ground. A six-inch green snake had just pulled his head back. Later, an enormous black snake was stretched across the trail in front of me. As I approached, he slithered off into the woods. It must have been a good snake sunning day.

Another time, on the trails around Lake Accotink in Fairfax County, I just missed a pair of black snakes with my foot. They squirmed into underbrush as fast as they could. And I jumped into the air as high as I could, doubled my stride length, and got home in record time.

More common to the orienteer are the beautiful deer that are surprised while feeding or slumbering. Their gracefulness, as they bound through the forest, is unforgettable. Rabbits, squirrels, and chipmunks are forever scurrying out of your way. Occasionally, a covey of quail will be flushed. I'll never forget the grouse hen that stayed with her young until I was inches away from the nest.

Such is the world of the orienteer and of nature. Whether you walk in the woods, locate a favorite picnic spot, or search out new areas for hunting or fishing, learning to use a map and compass will be of value. Add the excitement of competition, and you have the truly invigorating sport of orienteering.

that is required is that you get to know it and give it your best.

If you haven't got the time to formally adopt a stream, it doesn't mean you can't participate. Perhaps you can help by calling stream abuses to the attention of the proper authorities. Perhaps you can organize a stream cleanup or participate in one. If SOS groups are active in your area, you might want to offer your services. Protecting Virginia's waterways is a big enough job to use the assistance of every citizen in some way.

Streams are the lifeline of America's water resources. Since colonial times, an expanding population has caused many streams to undergo serious changes in their hydrological characteristics and water quality. Likewise, their aquatic and streamside communities have been disrupted, often disastrously.

The Save Our Streams program is calculated to restore and protect Virginia's waterways by encompassing all desirable watershed management practices. Soil stabilization in the watershed, streambank protection, low level stream devices, and a reduction of pollution discharges are a few examples of desirable improvements. These practices will be accomplished through the cooperation of landowners, farmers, conservation organizations, youth groups, community action groups and governmental agencies. Watershed problem conditions beyond local solution can be referred directly to responsible state and local government agencies for corrective measures.

Streams come in all sizes. All are essential to a healthful and enjoyable environment. Pick one your size and get started doing your part today!

tion. Size: 1¼-3 inches. The Carpenter frog, *Rana virgatipes,* has 4 light stripes on background of brown or greenish-brown. Lacks dorsolateral ridge. Associated with sphagnum bogs. Breeds April to mid-August. Eggs deposited like Wood frog. Size: 1½-2¾ inches.

Scaphiopus holbrooki, SPADEFOOT TOAD. Only this species of this genus occurs in Va. Has been found in various sandy localities throughout state. Comes out to breed only after very hard rain; seldom seen. Breeds March to August. Eggs laid in bands attached to grass stems. Usually has dark ground color, gray to black, with two light irregular lines down back. Unlike our other species, Spadefoot has vertical pupil instead of round one. Skin smoother than *Bufo;* no parotoid gland. Size: 1½-2¼ inches.

We wish to thank The Virginia Herpetological Society and Dr. G. C. Schaefer, University of Richmond, for their help with the distribution and illustrations.

Suggested Reading

Cochran, D. M., 19__, Living Amphibians of the World, Doubleday and Co., New York.

Conant, R., 1958, A Field Guide to Reptiles and Amphibians, Houghton Mifflin Co., Boston.

"USE A LITTLE COURTESY AND COMMON SENSE AND HELP PREVENT BOATING ACCIDENTS," sing the pelicans in the Game Commission's new Boating Safety Reminders. Watch and listen for them on your radio and television this summer.

Original sound tracks by Webb & Athey, Inc., advertising.

Puppet interpretations by 212 Limited; actual filming and cinematography by Colony Productions under the direction of Ken Collins Associates.

A NEW LOOK IN BOATING SAFETY

"I used to know a man that drank a quart of bourbon and a glass of water every time he went boating."

"What do you mean 'used to know'?"

"The bourbon didn't get him but the water sure did."

"Wear your life jacket and save energy. We won't have to waste gasoline dragging the lake for you."

"How can you still say boating accidents only happen to the other guy?"

"I was doing great until this 'other guy' ran into me."